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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,175	07/11/2001	Kevin Baum	CR00262M	9367
22917	7590	05/17/2006	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			KIM, KEVIN	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/903,175

Applicant(s)

BAUM ET AL.

Examiner

Kevin Y. Kim

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30,33,35,36,38,42-74 and 81 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 42-74 and 81 is/are allowed.
- 6) ☒ Claim(s) 1-5,7-10,13-18,20-23,26-30,33,35,36,38 and 132 is/are rejected.
- 7) ☒ Claim(s) 6,11,12,19,24 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-5,7-10,13-18,20-23,26-30,33,35,36,38 have been considered but are moot in view of the new ground(s) of rejection.

Applicant amended the above-identified claims by further limiting the spread sequence is provided "in parallel" and the transmitted sequence is formed by arranging a cyclic redundancy to such parallel spread sequence and contests the prior art reference (Lee ) fails to teach the newly added feature. Prior art references have been found establishing that the amended claims would have been obvious as set forth below. Claims 27 and 28 were not amended and thus the same ground of rejection applies.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102***

3. Claims 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (U.S. Patent No. 6,373,861).

Claim 27.

Lee describes a communication system (see Fig.1), comprising;

means (101) for providing at least spread sequence portion, and

means (105) for inserting a cyclic redundancy (see col. 2, lines 1-12) to the spread sequence to form a transmitted sequence.

Claim 28.

Since Lee teaches the cyclic redundancy as explained above Lee inherently teaches a means for generating the cyclic redundancy.

***Claim Rejections - 35 USC § 103***

4. Claim 1-5, 8, 13-18, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No. 6,373,861) in view of Spruyt (US 6,202,178) or Troulis et al (US 6,829,296) or Barton (US 6,654,431).

Claims 1, 13,14 and 26.

Lee describes a method (see Fig.1), comprising;

providing at least spread sequence portion in parallel (see the spread sequence is converted to parallel by S/P converter 103),

providing a cyclic redundancy (see col. 2, lines 1-12), and

forming a transmitted sequence based on an arrangement of the spread sequence portion in parallel and the cyclic redundancy.

Lee does not clearly describe the transmitted sequence is formed by arranging the spread sequence in parallel and the cyclic redundancy. However, adding a cyclic prefix (also known as a guard interval) to the parallel data is well known in the art as evidenced by Spruyt and Troulis et al . See Fig.1 of Spruyt, Fig.2 of Troulis and Fig. 3 of Barton et al, each illustrating a cyclic prefix adder (CPA) to data in parallel.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to form a transmitted sequence based on an arrangement of the spread sequence portion in parallel and the cyclic redundancy in the Lee's method as taught by one or more of Spruyt or Troulis et al or Barton.

Art Unit: 2611

Regarding claims 2-4, 15-17, Lee teaches that the spreaders 101 spread the transmission signal using orthogonal codes and PN spreading sequences (col. 1, lines 40-43). Therefore, the spread sequence portion clearly reads on the claimed "a fraction of a spread sequence," "a spread sequence" or "a plurality of concatenated spread sequences."

Regarding claims 5 and 18 the output of the summer 102 of Lee meets the claimed "baseband chip-level sequence. "

Regarding claims 8, 21, Lee teaches that the forming comprised inserting cyclic redundancy to the spread sequence portion for at least one symbol boundary (col. 2, lines 5-10).

5. Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, as applied to claim 1 above, in view of Letaief et al. (cited previously).

Lee teaches all the claimed subject matter but does not particularly indicate that the transmission data (TX data in Fig. 1) input to the spreaders (101 in Fig. 1) is from the same user (i.e., multicode CDMA). Letaief teaches a multicode modulation system (Fig. 1 ). The transmission data of a single user is divided a plurality of sub-block and each sub-block is spread by a respective spreader. Letaief also teaches that the multicode modulation system has the advantage of ability to use interference cancellation as an effective technique for improving the overall system performance (col. 2, lines 8-10) and increase data rate (col. 2, lines 29-30, note that the advantage of high data rate is also admitted by the applicants, see page 1, lines 26-29 of the specification). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to divide the data of a single user to be the transmission data of Lee, so as to achieve the

Art Unit: 2611

advantages identified above.

6. Claims 9, 10, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, as applied to claims 1 and 14 above, in view of Thomas et al (cited previously).

Regarding claim 9, 22, Lee teaches all the claimed subject matter but does not teach that the cyclic redundancy comprises zero value chips. Thomas teaches zero-value cyclic redundancy to avoid inter-carrier interference caused by time-varying channels (col. 12, lines 16-23). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use zero-value cyclic redundancy so as to avoid interference.

Regarding claims 10 and 23, the zero-value cyclic redundancy taught by Thomas is a known sequence.

7. Claims 29, 30, 33, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Chen et al (cited previously).

Regarding claim 29, Lee teaches an OFDM-CDMA system that performs the step of forming a sequence based on an arrangement of the spread sequence portion (101 in Fig. 1) and the cyclic redundancy (105 in Fig. 1, col. 2, lines 1-17), but does not particularly teach the step of forming is achieved by software. However, the use of software is well known in the art for at least the advantage of flexibility. Chen et al. teaches using software to implement an OFDM-CDMA system (abstract, page 76, right column, the last 6 lines). Therefore, it would have been obvious to a person of ordinary

Art Unit: 2611

skill in the art at the time the invention was made to use software to form the sequence of Lee for the advantage of flexibility.

Regarding claim 30, Lee describes that the spreaders 101 spread the transmission signal using orthogonal codes and PN spreading sequences (col. 1, lines 40-43).

Therefore, the spread sequence portion clearly reads on the claimed "a fraction of a spread sequence."

Regarding claim 33, the output of the summer 102 of Lee meets the claimed "baseband chip-level sequence".

Regarding claim 36, Lee teaches that the forming comprised inserting cyclic redundancy to the spread sequence portion for at least one symbol boundary (col. 2, lines 5-10).

8. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, as applied to claim 29 above, in view of Chen et al. (cited previously) further in view of Letaief et al. (cited previously).

Lee in view of Chen et al. teaches the claimed subject matter, as applied to claim 29 above, but does not particularly indicate that the transmission data (TX data in Fig. 1) input to the spreaders (101 in Fig. 1) is from the same user (i.e., multicode CDMA).

Letaief teaches a multicode modulation system (Fig. 1).

The transmission data of a single user is divided a plurality of sub-block (bktt) in Fig. 1) and each sub-block is spread by a respective spreader. Letaief also teaches that the multicode modulation system has the advantage of ability to use interference cancellation as an effective technique for improving the overall system performance (col. 2, lines 8-10) and increase data rate (col. 2, lines 29-30, note that the advantage of high data rate is also admitted

Art Unit: 2611

by the applicants, see page 1, lines 26-29 of the specification). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to divide the data of a single user to be the transmission data of Lee in view of Chen et al so as to achieve the advantages identified above.

9. Claims 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Chen et al (cited previously), as applied to claim 29 above, further in view of Thomas et al (cited previously).

Regarding claim 9, 22, Lee in view of Chen et al teaches all the claimed subject matter but does not teach that the cyclic redundancy comprises zero value chips. Thomas teaches zero-value cyclic redundancy to avoid inter-carrier interference caused by time-varying channels (col. 12, lines 16-23). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use zero-value cyclic redundancy so as to avoid interference.

Note that the zero-value cyclic redundancy taught by Thomas is a known sequence.

#### ***Allowable Subject Matter***

10. Claims 6,11,12,19,24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 42-74,81 are allowed.

#### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



Art Unit: 2611

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 12, 2006

*Kevin Y. Kim***KEVIN KIM  
PATENT EXAMINER**